Unit 2 revision questions.

1. Work out 457 × 7

2. Work out 38 × 61

3. Work out 5.8 × 7.2

4. Work out 62 × 1.35

5. Work out 0.075 × 190

6. Work out $\dfrac{1}{2} + \dfrac{3}{7}$

7. Work out $\dfrac{5}{6} - \dfrac{3}{8}$

8. Work out $\dfrac{1}{2} \times \dfrac{1}{4}$

9. Work out $\dfrac{4}{5} \times \dfrac{3}{7}$

10. Work out $\dfrac{3}{4} \div \dfrac{3}{8}$

11. Work out $\dfrac{3}{4} \div \dfrac{5}{9}$, giving your answer as a decimal

12. Find the LCM of 10 and 15

13. Find the LCM of 12 and 16

14. (a) write 27 as a product of its prime factors

(b) Write 36 as a product of its prime factors

(c) Find the LCM of 27 and 36

15. Simplify 6a×4b

16. Simplify 5a + 4(a-2)

17. Expand (x + 1)(x-2)

18. Factorise 8y+12

19. Factorise $15ab^2 - 25a^2b^3$

20. What is the nth term formula for the sequence 7, 9, 11, 13, 15, 17

21. What is the nth term formula for the sequence 2, 7, 12, 17, 22, 27

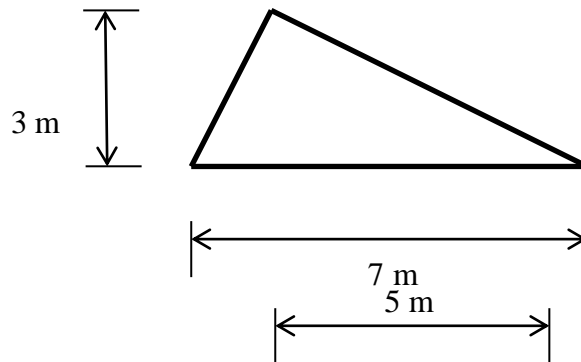22. What is the nth term formula for the sequence 100, 96, 92, 88, 84, 80

23. What is 5^3
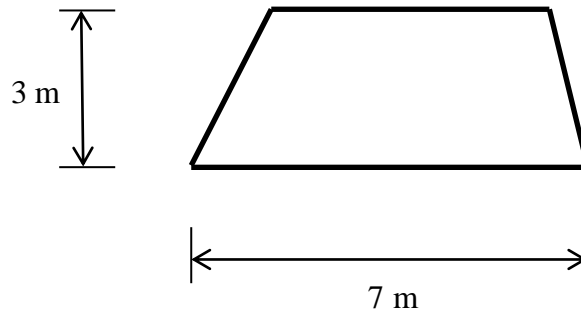
24. What is 5^{-3}

25. What is $16^{\frac{1}{2}}$

26. What is $16^{-\frac{1}{2}}$
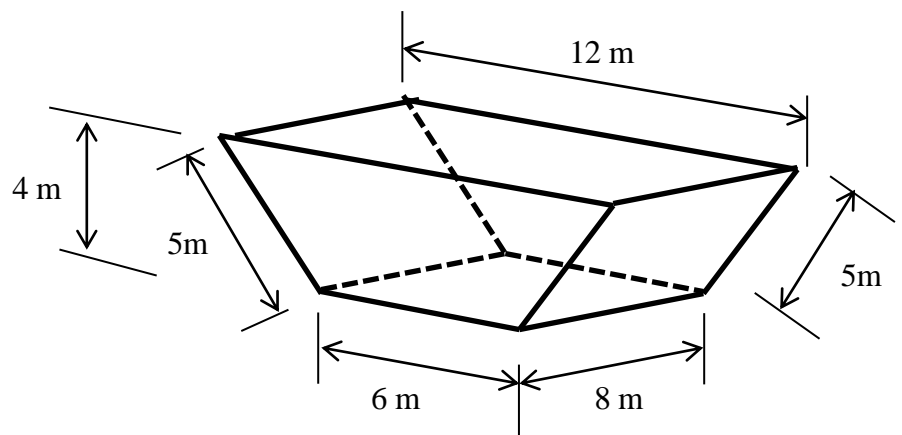
27. What is $16^{-\frac{3}{2}}$

28. Find the area:

3 m

7 m

29. Find the area:

5 m

3 m

7 m

30. Find the volume

and surface area.

12 m
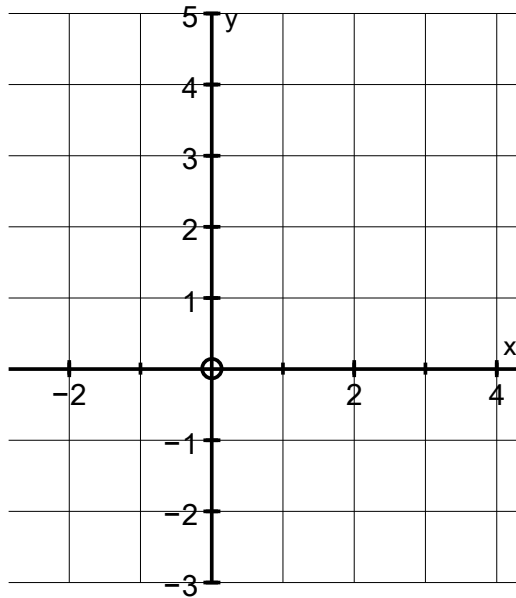
4 m

5m

5m

6 m   8 m

31. The shape in Q30 is a tank full of water. It is used to fill 44 gallon barrels.

Estimate the number of barrels can it fill.

32. The tank in q30 was originally filled by a hosepipe at a rate of 0.25 litre/second.

How long did it take, to the nearest hour?

33. Sketch the graph of y = 2x + 1 for x values between x=-2 and 2.

Write the equation of another line (a) parallel to y = 2x+1, (b) perpendicular.

34. Write 37180 in standard form

35. Write 33.2 in standard form

36. Write 0.0027 in standard form

37. Write 7.39×10^4 as a number

38. Write 1.85×10^{-4} as a number

39. Work out $3 \times 10^4 \times 4 \times 10^2$, giving your answer in standard form

40. Work out $\left(5 \times 10^3\right)^3$, giving your answer in standard form

41. Convert 64 km into miles

42. Convert 55 miles into km

43. Convert 120 km/h into mph

44. Convert 17.5 mph into km/h

45. Expand and simplify (x + 10)(x – 7)

46. Expand and simplify (2x + 3)(x – 4)

47. Factorise $x^2 + 9x + 20$

48. Factorise $x^2 - x - 42$

49. Factorise $x^2 - 23x + 42$

50. Factorise $2x^2 - 3x - 2$

51. Factorise $2x^2 - x - 21$
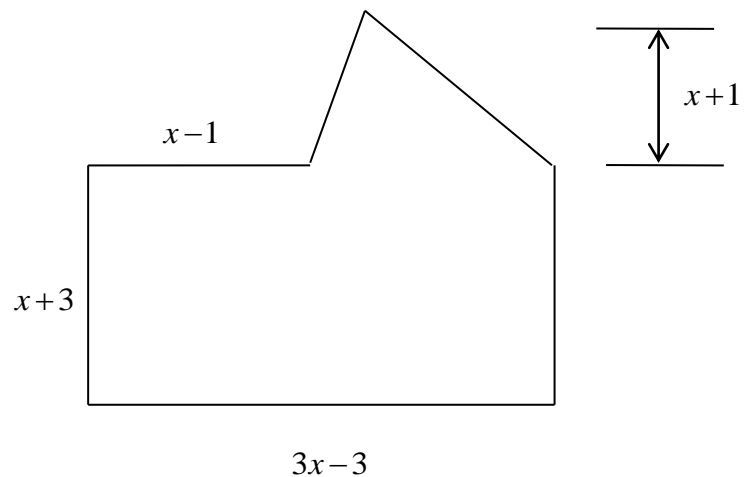
52. Simplify $\dfrac{x}{x+1} + \dfrac{1}{x-1}$

53. Simplify $\dfrac{x^2 + 2x - 24}{x^2 + x - 30}$

54. Simplify $\dfrac{3x^2 - 8x - 3}{2x^2 - x - 15}$

55. Factorise $3xy^2 + 15y^2 - 2xy - 10y$

(hint: factorise the first two, factorise the last two)

56. Find the area of this shape:

If x = 10 cm, what is the area (i) in cm^2, (ii) in mm^2, (iii) in m^2

57. A bag of gravel (1 m^3, mass 1000 kg) and a bag of iron ore (0.2 m^3, density 2500 kg/ m^3) are mixed. Assuming that the volumes add, what is the density of the mixture?

58. Write $\sqrt{72}$ in the form $k\sqrt{2}$

59. Simplify $\sqrt{12} + \sqrt{27}$

60. Write the following with a rational denominator: (a) $\dfrac{5}{\sqrt{11}}$, (b) $\dfrac{3}{2+\sqrt{3}}$ (c) $\dfrac{2}{\sqrt{3}-1}$

Answers:

1. 3199

2. 2318

3. 41.76

4. 83.7

5. 14.25

6. $\dfrac{13}{14}$

7. $\dfrac{11}{24}$

8. $\dfrac{1}{8}$

9. $\dfrac{12}{35}$

10. 2

11. 1.35

12. 30

13. 48

14. (a) 3×3×3 or 3^3

(b) 2×2×3×3 or $2^2×3^2$

(c) 108

15. 24ab

16. 9a-8

17. $x^2 - x -2$

18. 4(2y+3)

19. $5ab^2$(3-5ab)

20. 2n+5

21. 5n-3

22. -4n+104

23. 125

24. $\dfrac{1}{125}$

25. 4

26. ¼

27. $\dfrac{1}{64}$

28. 10.5 m²

29. 19 m²

30. vol 288m³, s. area 296m²

31. 1400 or 1500 (1455)

32. 320 h

33. (ii) y=2x+??, (iii) y = -0.5x+??

34. 3.718×10⁴

35. 3.32×10¹

36. 2.7×10⁻³

37. 73900

38. 0.000185

39. 1.2×10⁷

40. 1.25×10¹¹

41. 40 miles

42. 88 km

43. 75 mph

44. 28 km/h

45. x2+3x-70

46. 2x2-5x-12

47. (x+4)(x+5)

48. (x-7)(x+6)

49. (x-21)(x-2)

50. (2x+1)(x-2)

51. (2x-7)(x+3)

52. $\dfrac{x^2+1}{x^2-1}$

53. $\dfrac{x-4}{x-5}$

54. $\dfrac{3x+1}{2x+5}$

55. y(3y-2)(x+5)

56. 4x²+6x-10

(i) 450cm², (ii) 450000 mm², (iii) 0.045m²

57. 1250kg/m³

58. $6\sqrt{2}$

59. $5\sqrt{3}$

60a) $\dfrac{5\sqrt{11}}{11}$

(b) $6-3\sqrt{3}$

(c) $\sqrt{3}+1$

Name_____